Roll No.									

IET, Dr. Shakuntala Misra National Rehabilitation University, Lucknow,
Department of
Sessional Test – 1

Sem & Year: 1st SEM (1st Year) **Session: 2023-24**
Subject: Engineering Chemistry **Code: TBS 103**
Duration: 90 Minutes **Max. Marks: 20**

Part A

Attempt all questions **(1×4=4 Marks)**

1. A commonly used trivalent and pentavalent material is:

a) Ga & Ge b) Si & Ga
c) Al & As d) Sb & Al

2. Value of 510 ppm in degree clark is

a) 357 b) 35.07
c) 0.357 d) 3.57

3. F- Centre developed in case of

a) Anion vacancy b) cation vacancy
c) Schottky defect d) Impurity defect

4. 40.5 ppm of $Ca(HCO_3)_2$ and 33.33 ppm $CaCl_2$ together produces hardness around ----- ppm

a) 61 b) 57
c) 55 d) 64

Part B

Attempt any two Questions **(2×3=6 Marks)**

1. Draw MO Diagrams of N_2^+ and F_2^-
2. Calculate temporary and Permanent hardness of a water sample having 50 ppm $CaSO_4$ and 40 ppm $Mg(HCO_3)_2$ and 60 ppm MgCl2s impurities.
3. Arrange in increasing order of bond dissociation energy and Calculate bond orders of C_2^{2-}, O_2^{2+} and Ne_2^+

(13)

Part C

Attempt any two Questions **(2×5=10 Marks)**

(i) Explain the setup and working of Zeolite Permutit method for water softening in detail.
(ii) Discuss the %Composition, Manufacturing and setting of cement
(iii) Write short notes on liquid Crystals and its type with examples.